

Document Summary

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Advanced Educational Summary 23145786-bd5e-4d69-9812-d01425f535e2.pptx Edugram Bridging the Educational Accessibility Gap with AI This document introduces Edugram, an AI-powered educational platform designed to make learning more accessible and inclusive for deaf and blind individuals. It addresses the significant challenges these communities face in accessing mainstream educational resources and presents Edugram as a solution that leverages cutting-edge technologies to create equitable learning experiences. 1.

Overview Edugram is an innovative platform that uses Artificial Intelligence AI and Natural Language Processing NLP to provide tailored learning experiences for deaf and blind learners. For deaf learners, it offers real-time voice-to-sign language translation, gesture-based video generation, and interactive sign language resources. For blind learners, it features Jarvis, an AI voice assistant that enables hands-free learning through speech-to-text, text-to-speech, and conversational AI. 2. The Problem Educational

Inaccessibility The core problem Edugram addresses is the lack of accessible educational resources for individuals with hearing or visual impairments. Deaf Learners Face barriers due to limited access to real-time sign language interpreters, a scarcity of interactive gesture-based content, and difficulties navigating text-heavy materials. Blind Learners Struggle with visual interfaces that lack adequate voice or audio feedback, hindering their ability to navigate digital learning platforms independently. These accessibility gaps lead to reduced learning outcomes, social isolation, and missed opportunities for millions. 3.

Edugram s Solution An AI-Powered Platform Edugram aims to solve these problems by offering an inclusive, adaptive, and intelligent learning platform. For Deaf Learners Voice-to-Sign Language Translation Uses NLP models to convert spoken words into sign language animations in real-time. Gesture-Based Video Generation Employs Blender and animation tools to create dynamic sign language videos. Interactive Sign Language Dictionary Provides a searchable visual reference for key educational terms.

Document-to-Sign Learning Tools Summarizes PDFs and generates quizzes tailored for visual learning. For Blind Learners Jarvis AI Voice Assistant Enhances accessibility through speech-to-text and text-to-speech integration. Conversational AI Powered by Whisper and Gemini, Jarvis offers hands-free support and contextual responses. Voice Navigation Enables seamless navigation of learning modules and assessments using voice commands. 4. Key Features and Technologies Edugram incorporates several unique features and relies on a range of advanced technologies Auto PDF Summary Quiz Pipeline

Automatically generates summaries, flashcards, and self-assessment quizzes from uploaded documents, customized for each learner. Jarvis AI Voice Assistant Interprets spoken queries, reads content aloud, and responds using text-to-speech TTS , providing a hands-free learning experience. Real-Time Voice-to-Sign Translation Instantly converts spoken words into sign animations using AI models. Gesture Video Generation Engine Generates dynamic sign language videos using Blender, eliminating the need for pre-recorded footage. Integrated Sign Language Dictionary Offers a visual-first reference tool with searchable signs for key educational terms. Frameworks Django Used for backend APIs and logic. Next.js Used for the frontend UI. Hugging Face Provides NLP models for sign translation and summarization. Whisper Used for speech-to-text conversion for the Jarvis assistant. Gemini Pro Powers contextual responses and quiz generation. TensorFlow PyTorch Used for model training and personalization. Blender Used for gesture animation. Puppeteer Used for sign language dataset scraping. TTS Speech APIs Enable voice interaction for Jarvis.

5. Impact and Future Potential

Edugram has the potential to transform accessibility in education by Enhancing Comprehension and Engagement Providing deaf learners with real-time, gesture-based content. Enabling Hands-Free Learning Supporting blind learners with an intelligent voice assistant. Empowering Educators Equipping educators with tools to deliver accessible content easily. Fostering Digital Equity Prioritizing accessibility in every feature. The platform's scalability allows it to support other disabilities, such as autism, dyslexia, and cognitive impairments, in the future. It can be applied in various educational settings, including schools, special education centers, and self-paced learning platforms, and can evolve into a unified accessibility toolkit for educational institutions.

6. Core Modules

The core modules developed during the hackathon include Real-time voice-to-sign animation Jarvis AI for reading, voice commands for system control and voice education PDF summarizer quiz generator flashcards text Accessible frontend with both gesture audio interface Saved materials for accessing the content generated Image processing bot Topic explorer for personalized learning

7. Conclusion

Edugram represents a significant step towards inclusive, AI-powered education. By leveraging technology to adapt to the unique needs of deaf and blind learners, Edugram aims to empower them and create equitable learning opportunities for all. The project demonstrates a commitment to inclusive learning and a vision for scalable educational tools that serve all learners, regardless of ability.

8. Key Terminology

AI Artificial Intelligence The simulation of human intelligence processes by computer systems. NLP Natural Language Processing A branch of AI that deals with the interaction between computers and human language. TTS Text-to-Speech Technology that converts written text into spoken words. Speech-to-Text Technology that converts spoken words into written text. Gesture Animation The process of creating animated

representations of sign language gestures. API Application Programming Interface A set of rules and specifications that software programs can follow to communicate with each other.

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